

MEMC 01-0151(2960.1)
PATENT

MAY 22 2002

PATENT & TRADEMARK OFFICE IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Chang Bum Kim, et al.

Serial No. 10/054,629

Filed January 22, 2002

Confirmation No. 5778

For **THERMALLY ANNEALED, LOW DEFECT DENSITY SINGLE CRYSTAL
SILICON**

May 22, 2002

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INFORMATION DISCLOSURE STATEMENT

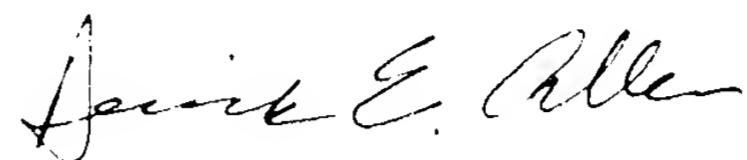
In accordance with 37 C.F.R. 1.97 and 1.98 and MPEP 609, and in compliance with the duty of disclosure set forth in 37 C.F.R. 1.56, applicants submit copies of the references listed on the attached PTO/SB/08A for consideration by the Patent and Trademark Office in the above-entitled application and to be made of record therein.

* For the Examiner's convenience, Applicants are now submitting herewith a translation of References 50-51, 53, 55-57, 59-63, 108, and 116. Applicants make no representation as to the accuracy or completeness of these translations.

This Information Disclosure Statement is being submitted pursuant to 37 C.F.R. §1.97(b) in that Applicants believe that it is being filed prior to the mailing date of the first Office action on the merits. However, the Commissioner is hereby authorized to charge any fees incurred regarding this Information Disclosure Statement to Account No.19-1345 if an Office Action was issued prior to the date of mailing of this Statement.

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Respectfully submitted,



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Application Number	10,054,629
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Confirmation Number	5778
First Named Inventor	Chang Bum Kim
Group Art Unit	1765
Examiner Name	Unknown

Attorney Docket No. MEMC 01-0151(2960.1)

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code ² (if known)		
	1	3,997,368		Petroff et al.	12/14/1976
	2	4,314,595		Yamamoto et al.	02/09/1982
	3	4,350,560		Helgeland et al.	09/21/1982
	4	4,981,549		Yamashita et al.	01/01/1991
	5	5,264,189		Yamashita et al.	11/23/1993
	6	5,316,742		Tomioka et al.	05/31/1994
	7	5,441,014		Tomioka et al.	08/15/1995
	8	5,474,020		Bell et al.	12/12/1995
	9	5,485,803		Habu, R.	01/23/1996
	10	5,487,354		von Ammon et al.	01/30/1996
	11	5,494,849		Iyer et al.	02/27/1996
	12	5,502,010		Nadahara, S. et al.	03/26/1996
	13	5,567,399		von Ammon et al.	10/22/1996
	14	5,593,494		Falster	01/14/1997
	15	5,667,584		Takano et al.	09/16/1997

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	16	5,704,973		Sakurada et al.	01/06/1998
	17	5,728,211		Takano et al.	03/17/1998
	18	5,789,309		Hellwig	08/04/1998
	19	5,846,322		Schulmann et al.	12/08/1998
	20	5,919,302		Falster et al.	07/06/1999
	21	5,935,320		Graef et al.	08/10/1999
	22	5,942,032		Kim et al.	08/24/1999
	23	5,954,873		Hourai et al.	09/21/1999
	24	5,958,133		Boulaev et al.	09/28/1999
	25	5,968,262		Saishouji et al.	10/19/1999
	26	5,968,264		Iida et al.	10/19/1999
	27	5,994,761		Falster et al.	11/30/1999
	28	6,045,610		Park et al.	04/04/2000
	29	6,048,395		Iida et al.	04/11/2000
	30	6,053,974		Luter et al.	04/25/2000
	31	6,066,366		Berenbaum et al.	05/23/2000
	32	6,093,913		Schrenker et al.	07/25/2000
	33	6,120,599		Iida et al.	09/19/2000
	34	6,153,008		von Ammon et al.	11/28/2000
	35	6,197,111		Ferry et al.	03/06/2001

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	36	6,228,164		von Ammon et al.	05/08/2001
	37	6,236,104		Falster	05/22/2001
	38	6,245,430		Hourai et al.	06/12/2001
	39	6,254,672		Falster et al.	07/03/2001
	40	6,312,516		Falster et al.	11/06/2001
	41	6,336,968		Falster et al.	01/08/2002

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T ⁶
		Office	Number ⁴	Kind Code ² (if known)			
	42	EP	0 503 816	B1	Shin-Etsu Handotai Company Ltd.	09/16/1992	
	43	EP	0 504 837	A2	Shin-Etsu Handotai Company Ltd.	09/23/1992	
	44	EP	0 536 958	A1	Shin-Etsu Handotai Company Ltd.	04/14/1993	
	45	EP	0 909 840		Shinetsu Handota KK	04/21/1999	
	46	EP	0 962 556	A1	Shin-Etsu Handotai Company Ltd.	12/08/1999	
	47	EP	0 962 557	A1	Shin-Etsu Handotai Company Ltd.	12/08/1999	
	48	EP	0 990 718		Sumitomo Metal Ind. Ltd.	05/14/2000	
	49	JP	1145391 (abstract only)		Yamashita Ichiro, et al.	06/07/1989	

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	50	JP	2-180789		Kawasaki Steel Corp.	07/13/1990	X
	51	JP	2-267195		Nippon Steel Corp.	10/31/1990	X
	52	JP	Hei 3-93700 (abstract only)		Nippon Steel Corp.	04/18/1991	
	53	JP	4-042893		Nippon Steel Corp.	02/13/1992	X
	54	JP	4-108682 (abstract only)		Fuji Electric Co., Ltd.	04/09/1992	
	55	JP	2528309	B2	Seito Ito, et al.	08/28/1996	X
	56	JP	8-330316 (Pub. Hei 07-158458)		Sumitomo Sitix Corp.	12/13/1996	X
	57	JP	HO 8-268794		Sumitomo Sitix Corp.	10/15/1996	X
	58	JP	HO 9-202690 (abstract only)		Shin-Etsu Semiconductor K.K.	08/05/1997	
	59	JP	11-157995	A	Sumitomo Sitix Corp.	06/15/1999	X
	60	JP	11-180800	A	Shin-Etsu Handotai Company Ltd.	07/06/1999	X
	61	JP	11-189495	A	Sumitomo Metal Ind. Ltd.	07/13/1999	X
	62	JP	11-199386	A	Shin-Etsu Handotai Company Ltd.	07/27/1999	X
	63	JP	11-199387	A	Shin-Etsu Handotai Company Ltd.	07/27/1999	X
	64	PCT	WO 97/26393 (abstract only)		Shin-Etsu Handotai Co., Ltd.	07/24/1997	
	65	PCT	WO 98/45507		MEMC Electronic Materials Inc.	10/15/1998	
	66	PCT	WO 98/45508		MEMC Electronic Materials Inc.	10/15/1998	

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	67	PCT	WO 98/45510		MEMC Electronic Materials Inc.	10/15/1998	
	68	PCT	WO 00/14776		MEMC Electronic Materials Inc.	03/16/2000	
	69	PCT	WO 00/22196		MEMC Electronic Materials Inc.	04/20/2000	
	70	PCT	WO 00/22198		MEMC Electronic Materials	04/20/2000	
	71	PCT	WO 01/21861	A1	MEMC Electronic Materials	03/29/2001	
	72	PCT	WO 01/21865	A1	MEMC Electronic Materials	03/29/2001	
	73	UK	GB 2 137 524	A	Hitachi Ltd. (Japan)	10/10/1984	
	74	UK	GB 2 182 262	A	Sony Corp.	05/13/1987	

OTHER ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	75	ABE, T., et al., "Swirl Defects in Float-Zoned Silicon Crystals," Physics., Vol. 116B, (1985), pp. 139-147	
	76	ABE, T., et al., "The Characteristics of Nitrogen in Silicon Crystals," VLSI Science and Technology/1985, (Electrochem. Soc. Pennington, 1985), Proceedings Vol. 85-5, (1985), pp. 543-551	
	77	ABE, T., et al., "Behavior of Point Defects in FZ Silicon Crystals," Semiconductor Silicon 1990, Proceedings of the Sixth International Symposium on Silicon Materials Science and Technology, Vol. 90-7 (1990), pp. 105-116	
	78	ABE, T., et al., "Dynamic Behavior of Intrinsic Point Defects in FZ and CZ Silicon Crystals," Mat. Res. Soc. Symp. Proc., Vol. 262, (1992), pp. 3-13	
	79	ABE, T., "The Formation Mechanism of Grown-In Defects in CZ Silicon Crystals Based on Thermal Gradients Measured by Thermocouples Near Growth Interfaces," Materials Science Engineering, Vol. B73, (2000), pp. 16-29	

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Sheet	6	of	11	Attorney Docket No.	MEMC 01-0151(2960.1)
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80	BORIONETTI, G., et al., "Investigation of Low Density Defects in Czochralski Silicon Crystals: Their Detectability, Formation Kinetics and Influence on Gate Oxide Integrity," Electrochemical Society Proceedings, Vol. 96-13, pp. 160-169
81	DE KOCK, A.J.R., "Microdefects in Swirl-Free Silicon Crystals," pp. 83-94 (source unknown) (date unknown)
82	DE KOCK, A.J.R., "The Elimination of Vacancy-Cluster Formation in Dislocation-Free Silicon Crystals," J. of the Electrochem. Soc.: SOLID-STATE SCIENCE AND TECHNOLOGY, Vol. 118, No. 11, (Nov. 1971), pp. 1851-1856
83	DE KOCK, A.J.R., et al., "Effect of Growth Parameters on Formation and Elimination of Vacancy Clusters in Dislocation-Free Silicon Crystals," Journal of Crystal Growth, Vol. 22 (1974), pp. 311-320
84	DE KOCK, A.J.R., "Point Defect Condensation in Dislocation-Free Silicon Crystals", Semiconductor Silicon, 1977, pp. 508-520.
85	DE KOCK, A.J.R., et al., "The Effect of Doping on the Formation of Swirl Defects in Dislocation-Free Czochralski-Grown Silicon Crystals," Journal of Crystal Growth, Vol. 49, (1980) pp. 718-734
86	DORNBURGER, E., et al., "The Impact of Dwell Time Above 900°C During Crystal Growth on the Gate Oxide Integrity of Silicon Wafers," Electrochemical Society Proceedings, Vol. 96, No. 13, pp. 140-151
87	DORNBURGER, E., et al., "The Dependence of Ring Like Distributed Stacking Faults on the Axial Temperature Gradient of Growing Czochralski Silicon Crystals," Electrochemical Society Proceedings, Volume 95-4, (5/1995) pp. 294-305
88	DORNBURGER, E., et al., "Simulation of Grown-In Voids in Czochralski Silicon Crystals," Electrochemical Society Proceedings, Vol. 97-22, pp. 40-49
89	DORNBURGER, E., et al., "Simulation of Non-Uniform Grown-In Void Distributions in Czochralski Silicon Crystals," Electrochemical Society Proceedings, Vol. 98, Vol. 1, pp. 490-503
90	DORNBURGER, E., et al., "Defects in As-Grown Silicon and Their Evolution During Heat Treatments," Materials Science Forum, 1997, Vols. 258-263, pp. 341-346.

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91	EIDENZON, A.M., et al., "Classification of Grown-In Microdefects in Czochralski-Grown Silicon Crystals," Inorganic Materials, Vol. 31(4), 1994, pp. 401-409
92	EIDENZON, A.M., et al., "Defect-Free Silicon Crystals Grown By The Czochralski Technique," Inorganic Materials, Vol. 33, No. 3, (1997) pp. 219-225.
93	EIDENZON, A.M., et al., "Influence Of Growth Rate On Swirl Defects In Large Dislocation-Free Crystals Of Silicon Grown By The Czochralski Method," Sov. Phys. Crystallogr.; Vol. 30 , No. 5 (1985) pp. 576-580.
94	FASLTER, R., et al., "Intrinsic Point-Defects and Reactions in the Growth of Large Silicon Crystals," Electrochemical Society Proceedings, Vol. 98-1, pp. 468-489
95	FALSTER, R., et al., "Intrinsic Point Defects and Their Control in Silicon Crystal Growth and Wafer Processing," Vol. 25(6) , (2000), pp. 28-32
96	FALSTER, R., et al., "On the Properties of the Intrinsic Point Defects in Silicon: A Perspective from Crystal Growth and Wafer Processing," Vol. 222(1), (2000), pp. 219-244
97	FOLL, H., et al. "The Formation of Swirl Defects in Silicon by Agglomeration of Self-Interstitials," Journal of Crystal Growth, 1977, pp. 90-1087, Vol. 40, North-Holland Publishing Company
98	HARADA, H., et al., "Oxygen Precipitation Enhanced with Vacancies in Silicon, pp. 76-85
99	HOURAI, M., et al., "Nature and Generation of Grown-In Defects in Czochralski Silicon Crystals," Electrochemical Society Proceedings, Vol, 98-1, pp. 453-467
100	HOURAI, M., et al., "Improvement of Gate Oxide Integrity Characteristics of CZ-Grown Silicon Crystals," Progress in Semiconductor Fabrication presented by: Semiconductor Equipment and Materials International, Semicon/Europa 93, March 30-April 1, 1993, Geneva, Switzerland
101	HOURAI, M., et al. "Growth Parameters Determining the Type of Grown-In Defects in Czockralski Silicon Crystals," Materials Science Forum, Vols. 196-201 (1995) pp. 1713-1718
102	HOURAI, M., et al., "Formation Behavior of Infrared Light Scattering Defects in Silicon During Czochralski Crystal Growth," J. Electrochem. Soc., Vol. 142(9), (1995), 3193-3201

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103	KISSINGER, G., et al. "A Method for Studying the Grown-In Defect Density Spectra in Czochralski Silicon Wafers," Journal of Electrochemical Society, Vol. 144, No. 4, (1997) pp. 1447-1456	
104	KITANO, et al., "Indentification of Vacancy Clusters in FZ-Si Crystals," Phys. Stat. Sol, Vol. 127(a), (1991), 341-347	
105	LEMKE, H., et al., "Analytical Approximations for the Distributions of Intrinsic Point Defects in Grown Silicon Crystals," Phys. Stat. Sol. (a) Vol. 176 (1999), pp. 843-865	
106	NAKAMURA, K., et al., "Formation Process of Grown-In Defects in Czochralski Grown Silicon Crystals," Journal of Crystal Growth, Vol. 180, (1997) pp. 61-72	
107	PARK, J.G., et al., "Effect of Crystal Defects on Device Characteristics", <i>Proceedings of the Symposium on Crystalline Defects and Contamination: Their Impact And Control In Device Manufacturing II</i> , Proceed. Vol. 97-22 (1997), pp.173-195	
108	PUZANOV, N.I., et al., "Influence of Transitional Crystallization Regimes on Microdefects in Silicon," USSR Academy of Sciences Newsletter, Vol. 22, No. 8 (1986), pp.1237-1242	X
109	PUZANOV, N.I., et al., "Relaxation In A System Of Point Defects In A Growing Dislocation-Free Crystal Of Silicon," Sov. Phys. Crystallogr., Vol. 31, No. 2, (1986) pp. 219-222.	
110	PUZANOV, N.I., et al., "Microdefects in Silicon Grown by the Czochralski Method with a Vertical Magnetic Field Acting on the Melt," Sov. Phys. Crystallogr. 35(1), (1990), pp. 102-105	
111	PUZANOV, N.I., et al., "Influence of Growth Conditions on the Formation of Microdefects in Dislocation-Free Silicon," Sov. Phys. Crystallogr., Vol. 34(2), (1989) pp. 273-278	
112	PUZANOV, N.I., et al., "The effect of thermal history during crystal growth on oxygen precipitation in Czochralski-grown silicon," Semicond. Sci. Technol., Vol. 7, (1992), pp. 406-413	
113	PUZANOV, N.I., et al., "Formation of the bands of anomalous oxygen precipitation in Czochralski-grown Si crystals," Journal of Crystal Growth vol. 137, (1994), pp. 642-652	
114	PUZANOV, N.I., et al., "Modeling Point-Defect Distribution in Dislocation-Free Si Crystals Grown from the Melt," Inorganic Materials, Vo. 32(1), (1996), pp. 1-9	

Examiner Signature		Date Considered
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Application Number	10,054,629
Filing Date	January 22, 2002
Confirmation Number	5778
First Named Inventor	Chang Bum Kim
Group Art Unit	1765
Examiner Name	Unknown

Sheet 9 of 11 Attorney Docket No. MEMC 01-0151(2960.1)

115	PUZANOV, N.I., et al., "The Role of Intrinsic Point Defects in the Formation of Oxygen Precipitation Centers in Dislocation-Free Silicon," Crystallography Reports, Vol. 41, No. 1, (1996), pp. 134-141	
116	PUZANOV, N.I., et al., "Cultivation, Morphology and Structural Integrity of Dislocation-Free Silicon Tetracrystals," Inorganic Materials, Vol. 32, No. 8 (1996), pp. 903-912	X
117	PUZANOV, N.I., et al., "Harmful Microdefects in the Seed-End Portion of Large-Diameter Silicon Ingots," Inorganic Materials, Vol. 33, No. 8, (1997) pp. 765-769	
118	PUZANOV, N.I., et al., "Modelling microdefect distribution in dislocation-free Si crystals grown from the melt," Journal of Crystal Growth, 178, (1997), pp. 468-478	
119	PUZANOV, N.I., et al., "Role of Vacancies in the Nucleation of Ringlike-patterned Oxidation-induced Stacking Faults in Melt-grown Silicon Crystals," Inorganic Materials, Vol. 34-4, (1998) pp. 307-314	
120	ROKSNOER, P.J., "Effect of Low Cooling Rates on Swirls and Striations in Dislocation-Free Silicon Crystals," Vol. 35, (1976), pp. 245-248	
121	ROKSNOER, P.J., "Microdefects in a Non-Striated Distribution in Floating-Zone Silicon Crystals," Journal of Crystal Growth, Vol. 53 (1981), pp. 563-573	
122	ROKSNOER, P.J., "The Mechanism of Formation of Microdefects in Silicon," Journal of Crystal Growth, Vol. 68 (1984), pp. 596-612	
123	RYUTA, J., et al., "Crystal-Originated Singularities on Si Wafer Surface after SC1 Cleaning," Japanese Journal of Applied Physics, Vol. 29(11) (1990), pp. L1947-L1949	
124	SEIDEL, T.E., "Silicon Wafers for the 1990's," Journal of Crystal Growth, Vol. 85, (1987), pp. 97-105	
125	SHIMANUKI, Y., et al., "Effects of Thermal History on Microdefect Formation in Czochralski Silicon Crystals," Japanese Journal of Applied Physics, Vol. 24, No. 12, (1985), pp. 1594-1599	
126	SINNO, T., et al., "On the Dynamics of the Oxidation-Induced Stacking-Fault Ring in as-grown Czochralski silicon crystals," Applied Physics Letters, Vol. 70, No. 17, (1997) pp. 2250-2252	
127	SINNO, T., et al., "Point Defect Dynamics and the Oxidation-Induced Stacking-Fault Ring in Czochralski-Grown Silicon Crystals," J. Electrochem. Soc., Vol. 145, No. 1, (1998) pp. 302-318	

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Sheet	10	of	11	Attorney Docket No.	MEMC 01-0151(2960.1)

128	TAN, T. Y., "Point Defects, Diffusion Processes, and Swirl Defect Formation in Silicon," Appl. Phys. A., Vol. 37, (1985) pp. 1-17
129	VANHELLEMONT, J., et al., "Defects in As-Grown Silicon and Their Evolution During Heat Treatments," Materials Science Forum, Vols. 258-263, (1997) pp. 341-346
130	VIRZI, "Computer Modelling of Heat Transfer in Czochralski Silicon Crystal Growth," Journal of Crystal Growth, 1991, Vol. 112, pp. 699-722.
131	VON AMMON, W., et al. "The Dependence of bulk defects on the axial temperature gradient of silicon crystals during Czochralski growth," Journal of Crystal Growth, Vol. 151 (1995) pp. 273-277
132	VON AMMON, W., et al. "Bulk properties of very large diameter silicon single crystals," Journal of Crystal Growth, Vol. 198/199, (1999), pp. 390-398
133	VORONKOV, V., "The Mechanism of Swirl Defects Formation in Silicon", Journal of Crystal Growth, Vol. 59 (1982) pp. 625-643.
134	VORONKOV, V., et al., "Behaviour and Effects of Intrinsic Point Defects in the Growth of Large Silicon Crystals", Electrochemical Society proceedings, Volume 97-22, (8/1997), pp. 3-17
135	VORONKOV, V.V., et al., "Vacancy-type microdefect formation in Czochralski silicon", Journal of Crystal Growth 194 (1998) 76-88
136	VORONKOV, V., et al., "Vacancy and Self-Interstitial Concentration Incorporated into Growing Silicon Crystals," Journal of Applied Physics, Vol., 86(11), 1999, 5975-5982
137	VORONKOV, V., et al., "Grown-in microdefects, residual vacancies and oxygen precipitation banks in Czochralski silicon" Journal of Crystal Growth, 304 (1999) pp. 462-474
138	WIJARANAKULA, W., "Numerical Modeling of the Point Defect Aggregation during the Czochralski Silicon Crystal Growth", Journal of Electrochemical Society, Vol. 139, No. 2 (Feb. 1992), pp.604-616
139	WIJARANAKULA, W., "Effect of High-Temperature Annealing on the Dissolution of the D-Defects in N-Type Czochralski Silicon," Appl. Phys. Lett., Vol. 64(8), (1994), 1030-1032

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140	WINKLER, R., et al. "Improvement of the Gate Oxide Integrity by Modifying Crystal Pulling and Its Impact on Device Failures" Journal of the Electrochemical Society, Vol. 141, No. 5 (5/1994) pp. 1398-1401.
141	YAMAGISHI, et al., "Recognition of D Defects in Silicon Single Crystals by Preferential Etching and Effect on Gate Oxide Integrity", Semicond. Sci Technol. 7, 1992, A135-A140.
142	YAMAUCHI, T., et al., "Application of Copper-Decoration Method to Characterize As-Grown Czochralski-Silicon," Jpn. J. Appl. Phys., Vol. 31, (1992), pp. L439-L442
143	ZIMMERMAN, H., et al. "Gold and Platinum Diffusion: the Key to the Understanding of Intrinsic Point Defect Behavior in Silicon", Applied Physics A Solids and Surfaces, Vol. A55, No. 1 (1992) pp. 121-134
144	ZIMMERMAN, H., et al. "Vacancy concentration wafer mapping in silicon" Journal of Crystal Growth, Vol. 129, (1993) pp. 582-592.

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